

## ABSTRACT

A method of plasma processing a silicon-containing object to be processed at a high etching rate without causing a surface of the object to have a hazy appearance, so that this surface can have an excellent visual quality.

- 5 In the plasma processing method of etching the surface of the semiconductor wafer, gas containing sulfur hexafluoride and helium is used as a plasma-generating gas. A fluorine radical as an active substance which reacts with silicon of the surface of the semiconductor wafer, gaseous silicon tetrafluoride yielded by the reaction and a compound ( $\text{SF}_n$ ) of fluorine and sulfur that is
- 10 generated as a reaction product are removed by the helium gas functioning as carrier gas. The helium gas prevents the reaction product from adhering to the surface of the wafer again.

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